

WHAT IS CLAIMED IS:

- 1 1. A converter-controller, operable to control a converter having a
2 transformer, the transformer having a primary and a secondary coil, the converter-
3 controller comprising:
4 a power device, coupled to the primary coil of the transformer;
5 a resonant circuit, coupled to the primary coil and the power device;
6 a voltage regulator, coupled to the resonant circuit; and
7 a control logic, coupled to the voltage regulator.
- 1 2. The converter-controller of claim 1, wherein the resonant circuit
2 comprises:
3 a central node;
4 a resonant capacitor, coupled between the central node and the power device;
5 a resonant diode, having an anode and a cathode, the cathode of the resonant
6 diode coupled to the central node; and
7 a resonant inductor, coupled between the anode of resonant diode and a ground.
- 1 3. The converter-controller of claim 1, wherein the voltage regulator
2 comprises:
3 a regulator diode, having an anode and a cathode, the anode of the regulator
4 diode coupled to the central node;
5 a regulator resistor, coupled to the cathode of the regulator diode;
6 a Zener diode, coupled between the regulator resistor and a ground; and
7 a regulator capacitor, coupled in parallel to the Zener diode.
- 1 4. The converter-controller of claim 3, wherein:
2 the control logic is coupled in parallel to the regulator capacitor.
- 1 5. The converter-controller of claim 3, wherein:

2 one or more of the regulator diode, the Zener diode, the regulator capacitor, the
3 regulator resistor, the resonant circuit, the power device, and the control logic is formed
4 on an integrated circuit.

1 6. The converter-controller of claim 1, wherein the power device is one of
2 a MOS-FET, a bipolar junction transistor, and an insulated gate bipolar
3 transistor.

1 7. The converter-controller of claim 1, wherein:
2 the control logic is coupled to a gate of the power device; and
3 the control logic is operable to control an on-off time of the power device.

1 8. The converter-controller of claim 3, wherein the converter comprises:
2 a high voltage link, coupled to the primary coil.

1 9. The converter-controller of claim 1, wherein the high voltage link is
2 coupled to at least one of a DC source and a rectified AC source.

1 10. The converter-controller of claim 1, wherein:
2 the central node of the resonant circuit is coupled to the high voltage link
3 through a connecting diode; and
4 the regulator resistor is coupled to the high voltage link through a connecting
5 resistor.

1 11. The converter-controller of claim 1, wherein:
2 the secondary coil of the transformer is coupled to the control logic, operable to
3 provide a feedback signal.

1 12. The converter-controller of claim 1, wherein the secondary coil is
2 coupled to the control logic through a coupled photodiode – phototransistor pair.

1 13. The method of operating a converter-controller, comprising a power
2 device, coupled to a primary coil of a transformer of a converter, a resonant circuit, a
3 voltage regulator, and a control logic, the method comprising:
4 powering the control logic by the power device, the resonant circuit and the
5 voltage regulator; and
6 controlling, by the control logic, the length of switch-ON and switch-OFF
7 intervals of the power device, thereby controlling an output voltage of the converter.

 14. The method of claim 1, wherein the converter is operated in one of a
flyback mode and a forward mode.